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## THE GENUS *ARUGISA* IN THE UNITED STATES, WITH THE DESCRIPTION OF A NEW SPECIES (LEPIDOPTERA: PHALAENIDAE)

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The genus *Arugisa* Walker is represented in the United States by only two species, one described herein as new. However, several differences exist between these two species. Because of these differences the name *Diallagma* Smith, placed in synonymy by Hampson, is reinstated as of subgeneric rank.

*Arugisa* WALKER, 1865, Cat. Br. Mus., XXXIII, p. 1023 (type: *aliena* Walker, sole species).—HAMPSON, 1926, Descr. N. Gen. and Sp. Lepid. Phal. Noct., p. 241. McDUNNOUGH, 1938, Checklist, p. 126.

*Poena* DRUCE, 1891, Biol. Centr.-Amer., Het., I, p. 483 (type: *porrectalis* Druce).<sup>2</sup>—SCHAUS, 1916, Proc. U. S. Natl. Mus., L, pp. 363-364.

*Diallagma* SMITH, 1900, Proc. U. S. Natl. Mus., XXII, p. 483 (type: *lutea* Smith, sole species, synonym of *Acrobasis latiorella* Walker).—DYAR, 1902, List. N. A. Lepid., U. S. Natl. Mus., Bull. 52, p. 207.—BARNES AND McDUNNOUGH, 1917, Checklist, p. 88.

The closest relatives of *Arugisa* are neotropical genera not occurring in the United States, namely, *Aglanice* Möschler, *Carillade* Schaus, *Cladenia* Möschler, etc. Characters and a key for the separation of these are given by Schaus (1916). Superficially the two North American species (but not the tropical species) look nearest the genus *Metalectra* Hübner, but structurally they are closer to *Eucalyptra* Morrison. From both of these genera the two North American species of *Arugisa* may be separated by veins 3 and 4 ( $M_3$  and  $Cu_1$ ) of the hind wing being long stalked; other characters are shown by the palpi (Figs. 2 and 5), the small prothoracic and

metathoracic tufts and the genitalia. The tropical species also differ in the elaborate tufting and fringing of the palpi of both sexes and the extensive tufting of the legs of the males. See Schaus (*loc. cit.*) for list of characters of *Poena*.

MALE GENITALIA (based on *porrectalis*, *antinoe*, *watsoni*, and *latiorella*).—Uncus long with tuft of setae from dorso-lateral margin near tip. Juxta (annellus) large, sclerotized bars on lower side articulating with harpes. Harpes of moderate length, well sclerotized for entire length except on inner side; ampullae<sup>3</sup> long and those of the two harpes usually somewhat different; inner ventral margin with curved setose lobe just beyond ampulla; transtillae present. Aedeagus large, curved; vesica armed with microtrichiae plus sclerotized areas bearing heavier spines; no macrochaetae.

FEMALE GENITALIA (based on same 4 species).—Ovipositor short. Apophyses of segment VIII rather short. Sternite VII roundly triangular, projecting over vulva; pleural membrane of this segment infolded and enclosing a mass of special scales. Ductus bursae moderately sclerotized and ridged, near vulva supported by a heavy ventral sclerite. Bursa copulatrix sclerotized in region of entrance of ductus

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<sup>2</sup> Genotype designated as *Hypena porrectalis* Guenée which is not the same as *P. porrectalis* Druce. Hampson and Schaus, following usual English custom, cite *porrectalis* Druce as genotype; another school of nomenclaturists would insist on the Guenée species as genotype. In this case the argument is only academic, as the name *Poena* is a synonym.

<sup>3</sup> In previous papers of the *Melipotis-Drasteria* series I have referred to such dorso-basal prongs as clavi but questioned same. The clavus is supposed to be a part of the sacculus, whereas these lobes have no connection to the sacculus but an intimate connection to the transtillae, the clasper (when present, compare *Drasteria* sp.) and the line of sclerotization between these two. Pierce might prefer to call this a basal clasper since it has such a swollen base, but I use ampulla because it may occur (e.g., *Drasteria*) with a conventional clasper. Perhaps a new term would be preferable but at least "ampulla" seems to be of the correct association. In the *Plusiinae* a slim basal lobe is present but in this subfamily it is associated with the sacculus or arising from membrane near the sacculus; in this case it is probably correctly called clavus (as Pierce does call it. See Genit. Br. Noctuidae).

bursae; with row of heavy spines which cross the ventral side and then around the left side and diagonally across the dorsal side, becoming smaller on dorsal side; bursa anterior to this row of spines membranous and uniformly covered with microtrichiae. Ductus seminalis arising from bursa near the ductus bursae.

The differences between the two subgenera may be summarized as follows:

Palpi porrect or only slightly obliquely ascending; first segment of palpus heavily fringed or tufted with hair below (hiding tongue); legs of male tufted and fringed.

..... Subgenus *Arugisa*.

Palpi obliquely ascending; first segment only lightly fringed with hair below (not hiding tongue); legs of male normal and closely scaled..... Subgenus *Diallagma*.

The subgenus *Diallagma* includes the single species *latiorella* Walker. The subgenus *Arugisa* will include *porrectalis* and *watsoni* which have been studied genitally and also *pilosa* Warren, *aliena* Walker and several other species examined externally at the U. S. National Museum. Another species studied (including male and female genitalia), namely, *antimoe* Druce, has somewhat different palpal and genital structures, and may need a separate subgenus.

### *Arugisa (Arugisa) watsoni*, new species

Figures 1-4

Head and palpi as figured. In male fore coxae with long light-colored hairs; fore femora with heavy tuft of blackish scales, the tuft about half as long as the tibia; fore tibiae with heavy fringe of light scales; fore metatarsus with black tuft on inner side; middle and hind femora and tibiae heavily fringed with light-colored scales. In female legs normal and smoothly scaled except for some long hairs on hind femora.

Head almost black on vertex, brown around edges of vertex and on genae and frons except for black patch below antennae; maculation of palpi on outer side as in Fig. 2, lighter on inner side; antennae dark, ringed with lighter. Thorax brown, small prothoracic tuft of dark brown-black scales tipped with whitish; patagia brown with some darker scales; small metathoracic tuft of black scales tipped with white. Abdomen brown with some darker scales. Legs light brown with some darker scales, the tarsi darker and ringed with whitish; tufts in male as above.

Fore wing (Fig. 1) ochreous suffused with red-brown and irrorated with some black; black

basal dash at costa to cell; t. a. line blackish, slightly oblique, angled outward on radial and cubital stems; a small black spot in cell just beyond t. a. line (in holotype connected to antemedial line by black suffusion and with it forming a dark bar across cell, in other specimens separate); no median line or shade; reniform indicated by a small dark point, obsolescent in some specimens; t. p. line dark, single, outwardly oblique or excurved to vein 7 ( $R_5$ ), faintly waved and erect to vein 4 ( $M_3$ ), incurved to submedian fold, excurved across anal vein and then incurved to inner margin; three light spots on costa between (but not counting) t. p. and subterminal lines; subterminal line a lighter brown defined by preceding darker suffusion and the slightly darker terminal area (subterminal line partly obsolescent in some specimens including holotype), slightly angled out on vein 7, incurved in discal fold, excurved to vein 4, incurved in submedian fold and excurved across anal vein with slight incurving to inner margin; terminal series of black points between the veins; cilia ochreous suffused with brown, lighter at base and tips. Hind wing uniform brown with faint terminal line. Underside of fore wing ochreous suffused with brown, costa lighter; faint postmedial and subterminal lines; terminal area lighter; faint terminal line forming spots between the veins; cilia as above. Underside of hind wing lighter than above; dark discal spot; curved postmedial line; faint dark subterminal line, and dark terminal line forming spots between the veins.

EXPANSE.—21-23 mm.

MALE GENITALIA (2 slides including holotype).—As figured (Fig. 3) but the lobe on the right harpe is curved under in its natural position, if straightened out this lobe would appear as the one shown on the left harpe. The points of the tip of the ampullae normally face posteriorly but have been turned sideward in mounting to show greatest profile. Setae omitted from harpes except for those on the small lobes (setae similar to those shown on figure of *latiorella*). Sclerites and microtrichiae in aedeagus all on vesica except few minute points on the ventral side near the tip.

FEMALE GENITALIA (3 slides including allotype).—As figured (Fig. 4); sclerites of segment VII shown by dotted outline only. Bursa covered with microtrichiae anterior to the row of spines.

HOLOTYPE.—♂. Florida, no further data. (In American Museum of Natural History.)

ALLOTYPE.—♀. Everglade, Florida. April 8, 1912. (In American Museum of Natural History.)

PARATYPES.—1 ♀, Miami, Florida, no date. (Ex Schaus Collection, in U. S. National Museum.) 2 ♂, 1 ♀, Florida,

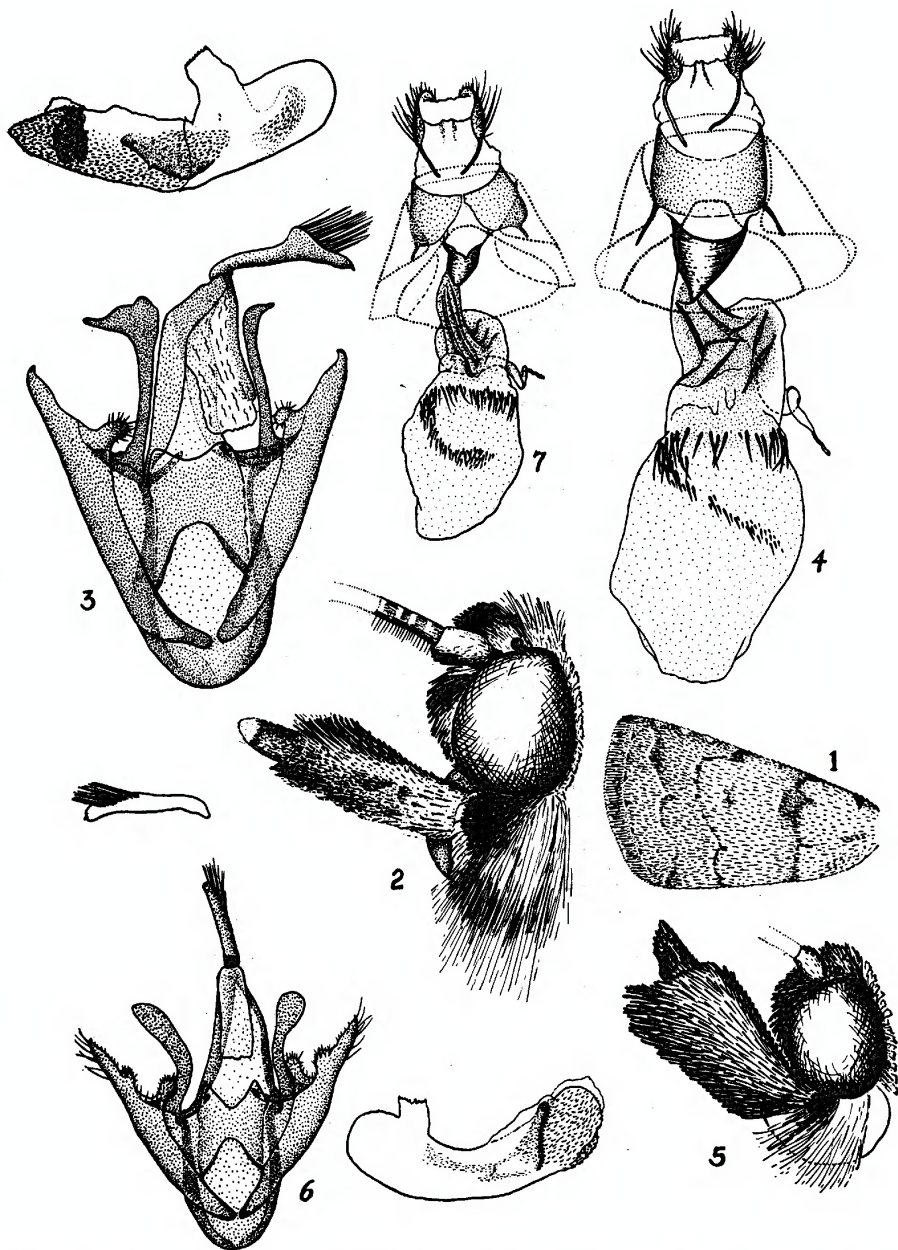


Fig. 1. *Arugisa (Arugisa) watsoni*, n. sp. Holotype ♂. Free-hand sketch of maculation of fore wing.

Fig. 2. *A. (A.) watsoni*, n. sp. Paratype ♂. Lateral view of head and palpi (female same).

Fig. 3. *A. (A.) watsoni*, n. sp. Paratype ♂. Genitalia, the aedeagus drawn above at same magnification.

Fig. 4. *A. (A.) watsoni*, n. sp. Allotype ♀. Genitalia, ventral view; sclerites of segment VII in dotted outline.

Fig. 5. *Arugisa (Diallagma) latiorella* (Walker). Lateral view of head and palpi of female (male same).

Fig. 6. *A. (D.) latiorella* (Walker). Male genitalia; lateral view of uncus above and of aedeagus alongside; all at same magnification. Specimen from Athens, Georgia, August, 1927 (A. G. Richards, Jr., coll.). Slide compared with that of cotype of *lutea* Smith in Amer. Mus. Nat. Hist.

Fig. 7. *A. (D.) latiorella* (Walker). Female genitalia, ventral view; sclerites of segment VII in dotted outline. Specimen from Florida.



no further data. (Ex Schaus Collection, in U. S. National Museum.)

As neither of the females bearing definite locality data is in perfect condition, the best male has been chosen as holotype. The two localities, Everglade and Miami, are both located at the southern end of Florida, and it seems quite likely that the species is restricted to the tropical zone at the extreme southern end of this state.

This species is unlike any of those in the neotropical collections in the U. S. National Museum, and seems to be close only to *albipuncta* Hampson (1926, Descr. N. Gen. and Sp. Lepid. Phal. Noct., p. 242) which is known only from the unique female type from Jamaica. *Watsoni* agrees fairly well with most of the pattern description of *albipuncta* but differs strikingly in the terminal line being only a series of black points between the veins and certainly not "a fine waved blackish terminal line forming small white spots in the interspaces with slight dentate white marks before them." Also in *watsoni* the black spot in the cell is not defined by white, the postmedial line (t. p. line) is single and below the submedian fold is excurved across the anal vein and then incurved to the inner margin.

In the North American fauna *watsoni* is naturally closest to *latiorella* Walker in maculation, lacking however the extensive dark suffusion before the subterminal line, and being larger and browner, and having quite different palpi and genitalia.

Named in honor of Mr. Frank E. Watson who has recently retired after many years in charge of the lepidopterological collections of the American Museum.

#### ***Arugisa (Diallagma) latiorella* (Walker)**

*Acrobasis latiorella* WALKER, 1863, Cat. Br. Mus., XXVII, p. 29. Type locality: Florida. Type: in British Museum.

*Diallagma lutea* SMITH, 1900, Proc. U. S. Natl. Mus., XXII, pp. 483-484. Type locality: Charlotte Harbor, Florida (Mrs. Slosson). Type: in U. S. National Museum, cotype in Amer. Mus. Nat. Hist.

Determinations based on colored drawing of Walker's type in the Barnes Collection (U. S. Natl. Mus.) and study of Smith's types, including male genitalia of cotype, in American Museum.

The maculation of this species is similar to that of *watsoni* (Fig. 1) but the more yellow-brown ground color and the extensive suffusion before the transverse lines gives it a different appearance. The poor sketch in Holland's Moth Book (Fig. 153, p. 245) is not particularly useful but is the only published figure. The almost solidly dark gray or black head and palpi and the scaling of the same are diagnostic (Fig. 5).

EXPANSE.—18-22 mm.

MALE GENITALIA (3 slides studied, including cotype).—As figured (Fig. 6). The heavy spinose bar in the aedeagus is on the vesica. The setose lobe of the sacculus is normally curved around the inner face of the harpe. The two ampullae are really alike, the seeming difference in the drawing is due to slight difference in positioning in mounting the slide.

FEMALE GENITALIA (2 slides studied).—As figured (Fig. 7), but the heavy row of spines in the bursa copulatrix passes around on the right side to about the mid-dorsal line (cannot be shown as directly above row on ventral side). Bursa anterior to this row of spines covered with barely visible microtrichiae.

DISTRIBUTION.—Texas, Alabama, Florida, Georgia, North Carolina, and Virginia. Fairfax, Virginia (F. H. Benjamin), is the most northern record. Not known from Mexico or the West Indies.